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Cover Page Footnote
Keynote address by Senator Dave Durenberger at the ALI-ABA Environmental Law Conference held in Washington, D.C. on February 19, 1987.

REMARKS*

DAVE DURENBERGER**

The subject that I have chosen for my talk this morning is ground water protection. It is an important part of the new environmental agenda for the Congress.

As we look back over the past two years, those of us who serve on the Environment and Public Works Committee in the Senate feel very fortunate. We reauthorized the drinking water law. We made it through that very difficult Superfund conference. We pushed the Clean Water amendments over the hurdle the President had put in the way. We added environmental protection to the water resources programs of the Corps of Engineers. And our colleagues on the Agriculture Committee laid the foundation for restructuring the pesticide law.

So much has been accomplished. That we were successful is partly a tribute to our leaders. It was also the result of the bipartisan spirit for environmental protection which has always prevailed in the Congress. And the success must also be attributed to the American public which has kept faith with the environmental commitment that this nation has made. Even in tough economic times, the American people continue to put the highest value on health, safety, and environmental quality.

But there are tasks yet to be done — one old item and one new. This will be the Congress that sends the President a reauthorization of the Clean Air Act with significant new controls on acid rain. As we review the Clean Air Act we will also need to take up the ozone nonattainment problem and toxic air pollutants. But acid rain will be our focus and will dominate our agenda until it is done.

The new issue is ground water protection. It is a subject in which I have become deeply involved. And it seems that everywhere I look these days I see a growing concern for the ground water resource. It's not an issue being driven by the politicians in Washington. We have been relatively slow to respond. But we *will* respond. I don't know that this will be the Congress that passes *the* comprehensive ground water protection bill that many have called for, but as I hope to outline for you, there is every reason to believe that efforts to protect our ground water will meet with success in this

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* Keynote address by Senator Dave Durenberger at the ALI-ABA Environmental Law Conference held in Washington, D.C. on February 19, 1987.

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Congress.

How do we explain this rapidly growing interest in ground water protection? Well, as a nation we are only beginning to understand and appreciate our ground water resources. And everything we learn suggests that this vast and complex resource is more valuable and more vulnerable than we had realized.

Consider the Ogallala Aquifer. The largest body of freshwater in the world is not a lake. It's the Ogallala, an underground water formation that lies below eight states in the high plains stretching from South Dakota to Texas. At the end of World War II the Ogallala over Texas contained 500 million acre feet of water. An acre foot is about 325,000 gallons of water — enough to flood one acre one foot deep.

Today, it is 360 million acre feet. By the end of the century, just fifteen years from now, it is projected that the Ogallala in Texas will have fallen to 196 million acre feet. Sixty percent of the resource will have been used up in just sixty years time.

It will take generations to restore. Today, the annual *withdrawal* rate is six million acre feet. The *recharge* rate — the rainfall that soaks into the ground to replenish the aquifer — is only three percent of that. It will take a thousand years for the rainfall to restore the water that we have mined just since the end of World War II.

If you are from Texas — or Oklahoma, Kansas, or Nebraska, where the withdrawal rates are just as high — you know what it means to see that resource used up in one generation. Think of it: The largest body of freshwater in the world, built up over thousands of years, drunk dry in six decades. It's that kind of understanding that is moving ground water to the top of the natural resource agenda in this nation today.

The ground water resource is vast. Most of the communities in the Nation have usable ground water near the surface. The total volume of America's ground water resource is fifty times greater than all of the water that flows in our rivers and streams each year. In fact, thirty percent of the water flowing in the rivers and streams is generated by ground water aquifers, rather than by rain water directly.

And ground water is old. Scotch whiskey is old when it is twelve. If this glass of water were the typical water from a ground water well, the rain that produced it would have splashed the britches of our founding fathers 200 years ago. It has spent the last two centuries working its way to a drinking water well. An average glass of ground water is vintage 1787 — 200 years old.

So ground water is a vast and very complex resource that we depend upon. For 117 million Americans — one-half of us — it is the source of our drinking water. In rural areas ninety-seven percent of all households depend on ground water supplies. Fourteen million homes in our country still have private wells.

As a drinking water resource, there are some characteristics of ground water which set it apart from surface waters. First, surface waters are usually treated before they reach the consumer. The water is disinfected with chlorine to kill the biological contaminants and filtered to take out the dissolved solids and other pollutants. Ground water, on the other hand — and especially for those using private wells — often goes right to the tap. We drink it as we find it: Raw.

Second, pollutants in ground water may be much more concentrated than in surface waters. Waters in rivers and lakes move rapidly and pollutants introduced at one point are quickly diluted by mixing with large volumes of water. But ground water moves very slowly and there is little mixing. A spill of liquids on the surface or a leak from a landfill or an underground tank will create a plume of contaminants which will stay concentrated as it moves through the aquifer. While a serious incident of surface water pollution might produce contaminants in the range of ten to one hundred parts per million, the same contaminant may be found in ground water at several thousand parts per million. If you are drinking untreated ground water from one of those concentrated plumes, you are in big trouble.

Third, it is practically impossible to clean up an aquifer once contaminated. In fact, *nobody has ever restored a contaminated aquifer to its original condition.* The average Superfund site now requires $8.5 million of remedial action and the cost is rapidly rising. We know of an aquifer in Colorado which was contaminated by Department of Defense activities and pesticide production waste which may cost as much as $1.3 *billion* to clean up.

We have made great strides as a nation in restoring surface water quality over the past decade. But we dare not think that we could do the same for ground water if it should become contaminated.

The evidence seems to indicate that contamination incidents are increasing. Some of the evidence accumulates because we are *looking* for contaminants where we didn't before. We don't trust our water supply anymore, so we are having it analyzed. And our technology for detection has gone through a revolution. When we do

look, we are more likely to *find* contaminants. More than 200 separate chemical and biological contaminants have been detected in drinking water wells.

But I think that the increasing evidence of contamination is more than an artifact of our new scientific tools. It is a real and advancing cancer. And it is advancing despite the commitment to environmental protection which has been expressed in national law again and again over the last fifteen years.

Those very laws have in some cases dramatically increased the potential for ground water contamination. We want clean air, so we mandate scrubbers for our power plants. The massive amounts of sludge produced by the scrubbers is dumped on land. We want clean surface water, so we prohibit the piping of liquid wastes into our rivers. We hold the wastes in surface impoundments instead, where it can leach into an aquifer, or we pump it directly underground with high-pressure injection wells.

So ground water is often delivered to the consumer untreated. When polluted, the level of contamination may be very high. Once polluted, it is practically impossible to clean up. And it appears that the incidents of contamination are increasing. Even our laws to protect air, surface water, and land resources may be adding to the potential for ground water contamination.

What do we do? I think that the facts and factors I have just recited — characteristics that set ground water apart from other resources — add up to a justification for a new, national program to protect ground water supplies. It needs to be a *prevention* program. Detection and correction of contamination after it occurs are not adequate substitutes for prevention in the case of our ground water resources.

That's one dimension of the coming ground water debate: The nature and uses of the resource convince us that we need a program to prevent contamination. But the second and more difficult dimension will be to develop a program that can do the job. We are only beginning to understand the basic elements of a real national effort to *prevent* ground water contamination. It will include many new elements. We will need new programs for research, mapping, monitoring, setting a national goal. coordinating with surface water management, taking corrective ac. on, maybe even some provisions dealing with the quantity side of the equation, and to prevent overdrafting.

I have already done some thinking on three of the elements that might be included in a comprehensive program which I would like

to share with you this morning. In my view, the three most critical elements of a prevention program are aquifer classification, water quality standards, and control requirements for sources of contamination. Much of the debate in the committees and subcommittees of the Congress over the next two years will be about these three tools. How can we use aquifer classification, water quality standards, and source control requirements most effectively to protect our ground water resources?

Let me begin with aquifer classification, because both the Congress and the Environmental Protection Agency have already made beginnings on national classification systems. Many of you may be familiar with the EPA classification system.

At the center of the EPA scheme is a vast middle class — Class II — which is to include most of the ground water of the nation: waters which are currently or may in the future be used for drinking water supply. At the top are Class I aquifers: the extremely valuable or vulnerable ground water formations that deserve special protection. Class III waters at the bottom are generally those so saline and isolated that they have no human or environmental values.

EPA has now published a 400-page document providing guidelines for the use of this classification system. The document offers guidance to permit writers, enforcement lawyers, and others throughout the Agency and the states who make regulatory decisions with respect to specific facilities.

It works like this. At the time EPA is required to make a decision with respect to a particular facility — for instance, issuing a permit, granting a waiver, or approving a corrective action plan — only at that time will the Agency begin to investigate the ground water within the vicinity of the facility to determine what level of protection should be incorporated in the decision. If the ground water within a two mile radius of the facility is Class I — extremely valuable or vulnerable — extra protection will be incorporated in the decision. If the ground water is Class II, the basic legal standard will be applied. If it's Class III, the basic standard may be waived.

That seems to me an extremely cumbersome approach. At the time of the decision the owner of the facility will most likely have an interest in a Class III designation to minimize the ground water protection that must be provided. Neighbors in the community will always be clamoring for a Class I designation to assure the maximum level of protection. And since the designations are ad hoc and

reactive rather than anticipatory, EPA will be starting from scratch with basic questions about the value of the resource with each new regulatory decision. It's almost like requiring an environmental impact statement with the fundamental value of the resource open to dispute. Can you imagine going through that every time someone installs an underground storage tank or applies a herbicide to a field?

Although I am not comfortable with the classification system that EPA has developed, I do believe that classification has a role to play in a national program to prevent ground water contamination. Anticipatory classification of ground water according to its vulnerability or yield can be very helpful in establishing priorities as we begin the protection effort. Classification can also assure that our national program is cost-effective in the long run.

Congress laid the foundation for a different approach to classifying ground water resources in the Safe Drinking Water Act amendments which were signed by the President last summer. The wellhead protection program in that legislation is a form of ground water classification. It requires the states, first, to identify the land areas immediately adjacent to water wells operated by public drinking water supply systems. Second, within those areas, the states are to identify the facilities and activities that are likely to be potential sources of ground water contamination. As a third step, the states will develop protection programs to prevent contamination by the sources located within wellhead areas. The President's 1988 budget contains $8 million for grants to the states to assist in the first steps of this wellhead identification process.

That is a protection program built on *classification.* In the future, we may want to expand the wellhead protection area concept to include other ground water resources — including special recharge areas, aquifers that serve a large number of private wells, and high-yield aquifers that are likely to be future water supply sources — for the same kind of priority attention that wellhead protection areas are getting under the new law. It is a promising new concept which we intend to build upon as we develop comprehensive ground water protection legislation.

The second critical element which I mentioned was ambient ground water quality standards. By standards, I mean federal regulations setting the maximum allowable concentration of each chemical or biological contaminant in a ground water sample. Conceptually, this is the most difficult of the three elements we are reviewing today. Standards are essential. They can be an objective

yardstick to judge what must be done to protect human health and the environment. But they may also be the source of considerable abuse and delay.

We have incorporated standards in many of our other environmental laws. The Clean Air Act requires EPA to set standards for toxic air pollutants. The Clean Water Act requires the states to set water quality standards for conventional and toxic pollutants for various water bodies as necessary to attain the designated uses. The Safe Drinking Water Act is almost a pure standards law, but has been crippled for the whole twelve years of its existence because of the failure of EPA to set standards. Hopefully we ended that era with the 1986 Drinking Water Amendments, which require EPA to set standards for eighty-three named substances over the next three years. The pesticide law also includes food residue standards. So we have a great deal of experience with national health and environment standards.

But much of that experience is discouraging. Although EPA has published a list of 183 toxic air pollutants, it has only issued emissions standards for six. The states have developed only a very few standards for the organic pollutants which are dumped into our surface waters every day. In fact, a major piece of the new amendments to the clean water law is aimed at the states and is intended to close this standards gap. I have already mentioned the failure of the Safe Drinking Water Act. And I won't even go into the newest iteration of legislated frustration by describing our efforts to incorporate cleanup standards in the Superfund program.

As my comments may lead you to believe, I have deep reservations abut the use of standards in a ground water prevention program. It is not just that the chemical revolution moves faster than standard-setting at EPA and that our whole experience with standards has been discouraging. That would be enough, but there are also unique characteristics associated with the ground water resource which make it less amendable to a standards-driven process than our other environmental resources.

Air and surface water mix thoroughly, so that a sample or small set of samples can be taken that is representative of the ambient concentrations. Ground water doesn't mix. It is easy to miss concentrated plumes of contamination even with sophisticated ground water sampling systems. In addition, it may take years before contaminants released on the surface percolate through the unsaturated zone to reach the ground water that is being sampled. A farmer can apply pesticides to his fields for many seasons before

those pesticides show up in the ground water. And when they do show up, it is probably too late to institute effective steps that will prevent further contamination.

So standards have a role to play. They are often essential for enforcement and cleanup efforts. But they are an unreliable tool for *prevention* programs and must be woven into a comprehensive ground water protection measure with great care.

The last of the three critical elements is control requirements for potential sources of contamination. Here I mean siting, design, installation, operation, maintenance, closure, and other requirements that might be imposed through federal regulation of the owners and operators of particular facilities that are significant sources of ground water contamination.

The best example of this approach to protection is the underground storage tank program which EPA will be promulgating in the next few months. It was in November of 1983 that the Senate Environment Committee first began its series of hearings on ground water protection. At that hearing a panel of EPA assistant administrators told us that the most serious ground water contamination problem was leaking underground storage tanks, particularly tanks containing petroleum.

There are an estimated 1.4 million underground petroleum storage tanks in the United States. Most of them are bare steel tanks. Many are reaching twenty and thirty years of age. They are not equipped with corrosion protection. A large percentage are beginning to leak. A national EPA survey of the tanks at service stations indicates that as many as thirty-five percent may be leaking gasoline to soil, surface water, and ground water. That's 189,000 tanks at service stations alone.

In the Hazardous and Solid Waste Amendments signed by the President in November of 1984 we added a new Subtitle I to RCRA requiring EPA to develop a new regulatory program to prevent leaks from underground storage tanks. EPA is now recommending regulations that will require corrosion protection for all new tanks. And each new tank will be equipped with a leak detection system. These regulations will also require upgrading of the tanks that are already in the ground on an accelerated schedule. The petroleum industry supports this regulatory proposal.

This has been a very positive start for ground water protection efforts. In 1983 EPA told the Congress that the principal ground water contamination problem was underground storage tanks. Within a year we had enacted a legislative response. We prohibited

by statute the installation of bare steel tanks and required EPA to write performance standards for new tanks. Many states followed this federal lead with regulatory programs of their own. In the Superfund bill last summer we added a cleanup program for tanks that have already caused environmental damage. It is a substantial effort, funded by an increase in the gasoline tax at $500 million over five years. There has already been a $50 million appropriation for the cleanup program. The regulations for tanks will be published in March and will be enforceable by this time next year.

Many at EPA will tell you that the number two priority for ground water, after LUSTs, is pesticide contamination. When the nation's pesticide law, FIFRA, was up for reauthorization last fall, I offered a ground water protection amendment that took the same "control the sources" approach. It required EPA to identify the pesticides most likely to leach into ground water and to impose restrictions on the uses of those pesticides that would minimize the potential for ground water contamination. It was a consensus amendment, supported by a broad coalition of industry and environmental groups. We didn't get all the way through the legislative process last year, but I expect the FIFRA amendments will be back before the Congress soon. We have every reason to believe that a ground water protection amendment will be an important part of that bill when it goes to the President.

I think that the most promising tool in the national effort to prevent ground water contamination will be control requirements imposed on the most significant sources of contamination. In most cases those controls will be technology requirements written by EPA and implemented by the owners and operators of the sources.

Septic tanks, pesticides, surface impoundments, landfills, injection wells, fertilizer applications, irrigation practices, wastewater collection and treatment systems, mining, and oil and gas operations. That's my *short* list of significant sources. Congress can give EPA this list of sources in a comprehensive bill with instructions to identify the appropriate protection measures for each category. Or we can do it one source and one bill at a time. Whichever way we go, I believe that we will have a federally mandated set of control requirements for these sources sooner or later. It is the only approach that will effectively protect the nation's ground water resources from further contamination.

The states will play a significant role in the implementation of these control and technology requirements. As we have done with underground storage tanks and most other technology-based pro-

grams, we can delegate the regulatory and enforcement functions to the states, which have requirements at least as stringent as those contained in the federal program.

To sum up my comments today, I would say that there will be two dimensions to the ground water protection debate in the 100th Congress. One dimension is the level of commitment. Are we going to have a substantial, federal commitment to protect the ground water resources of this nation? Or will we leave it to the states for now, giving them no more than encouragement, technical assistance, and an occasional planning grant?

The second dimension of the debate is about the methodology of the program. Whether the program is state or federal, we will still need to fashion the fundamental tools for this effort. EPA is leading with a classification scheme. There is a bill that has been introduced by the Democratic members of the Environment and Public Works Committee that leans heavily in the direction of ambient ground water quality standards. *I* would advocate a program that focuses mostly on the sources of contamination and includes siting, design, and operating requirements that would minimize discharges of contaminants from those sources.

Whether we pass a comprehensive bill in this Congress or not, I think that the next two years will bring substantial progress in protecting our ground water. EPA will be implementing the LUST and wellhead protection programs. Those who want standards will be seeing the results of the 1986 Drinking Water Amendments. And the Congress will most surely update the pesticide laws of this nation, including a strong ground water protection provision supported by a large coalition of interests.